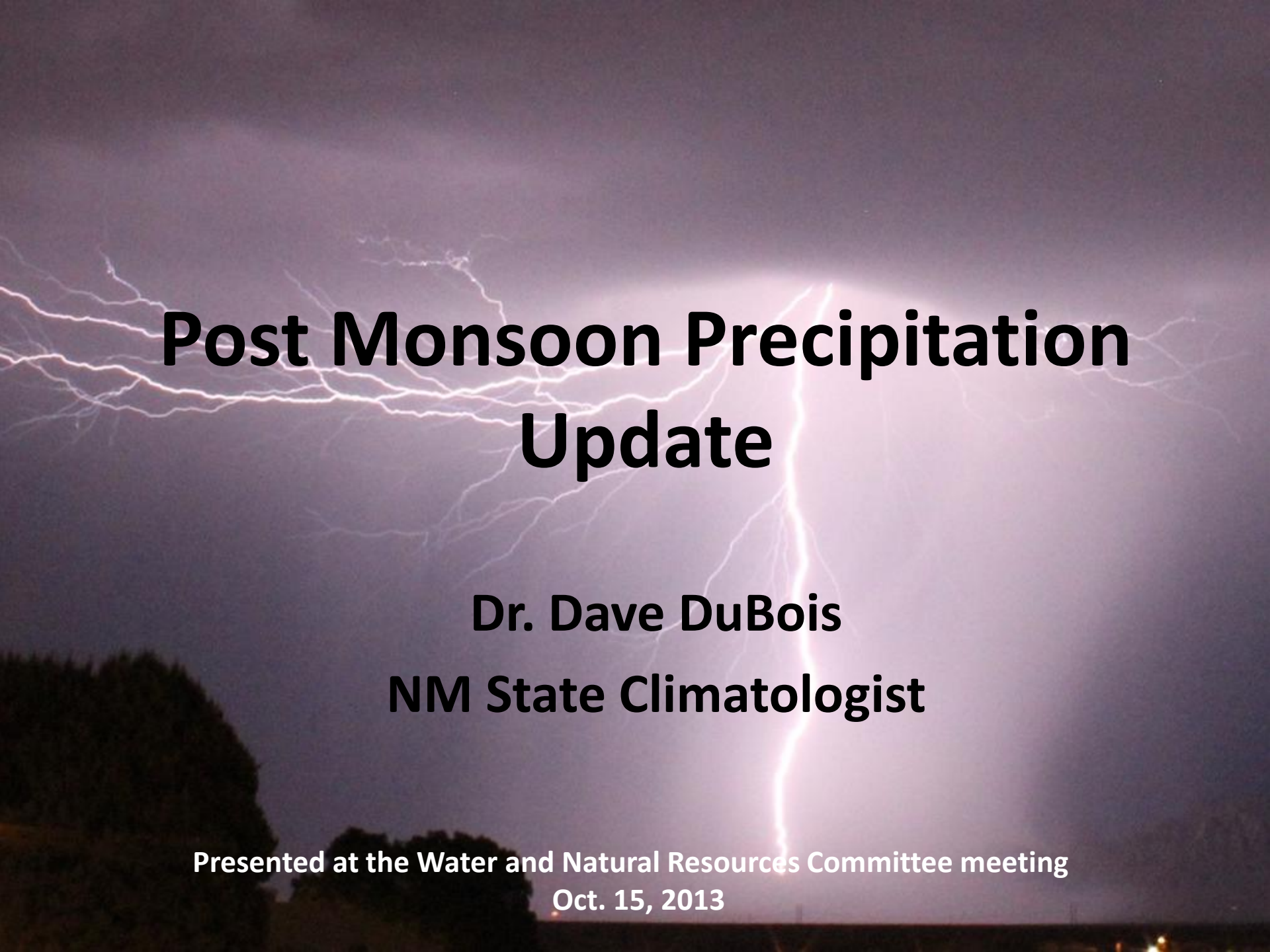
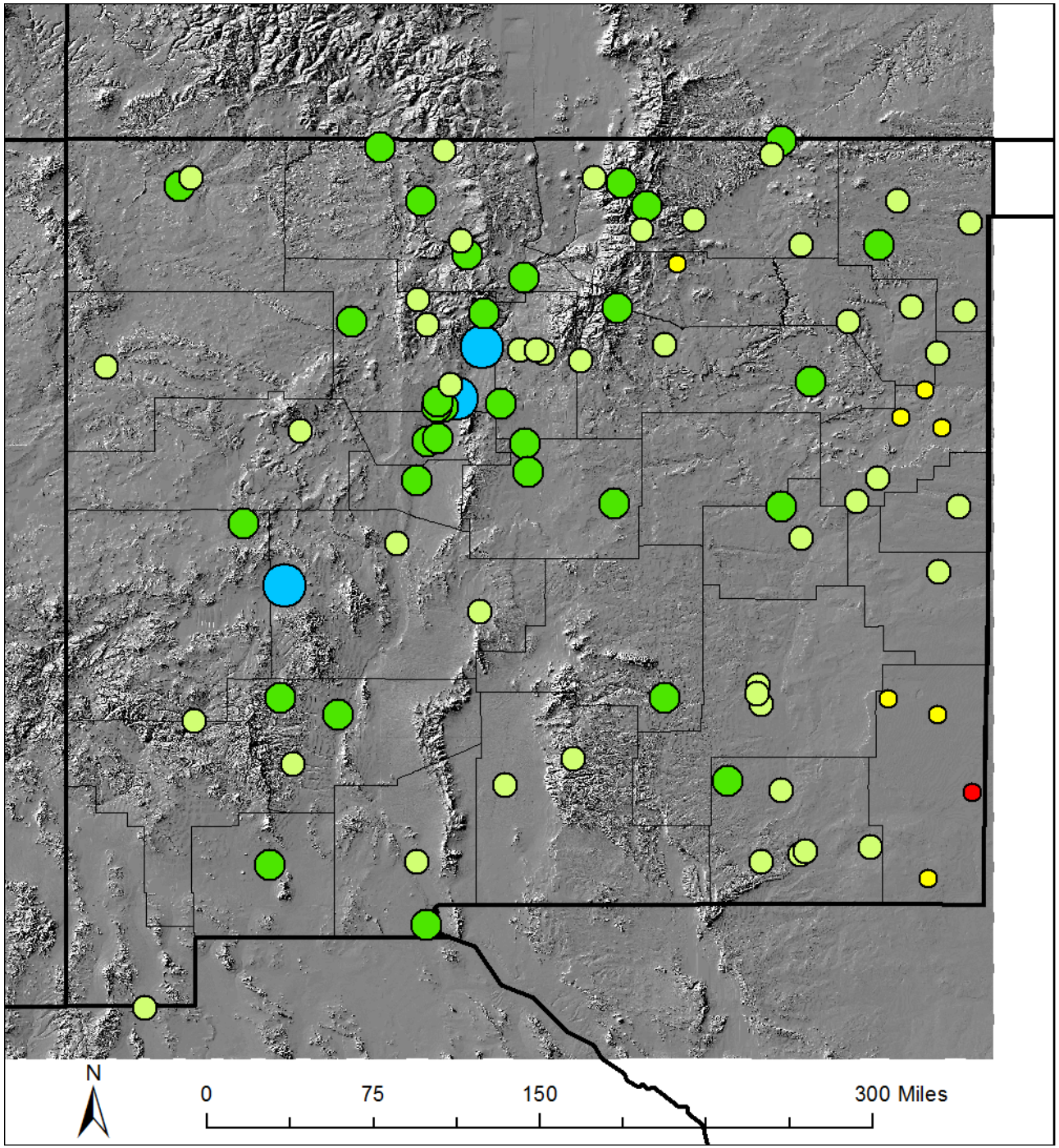


Post Monsoon Precipitation Update

Dr. Dave DuBois

NM State Climatologist

Presented at the Water and Natural Resources Committee meeting
Oct. 15, 2013



July-September Precipitation Percent of Normal "The Monsoon"

Legend

July to September Precipitation percent of normal

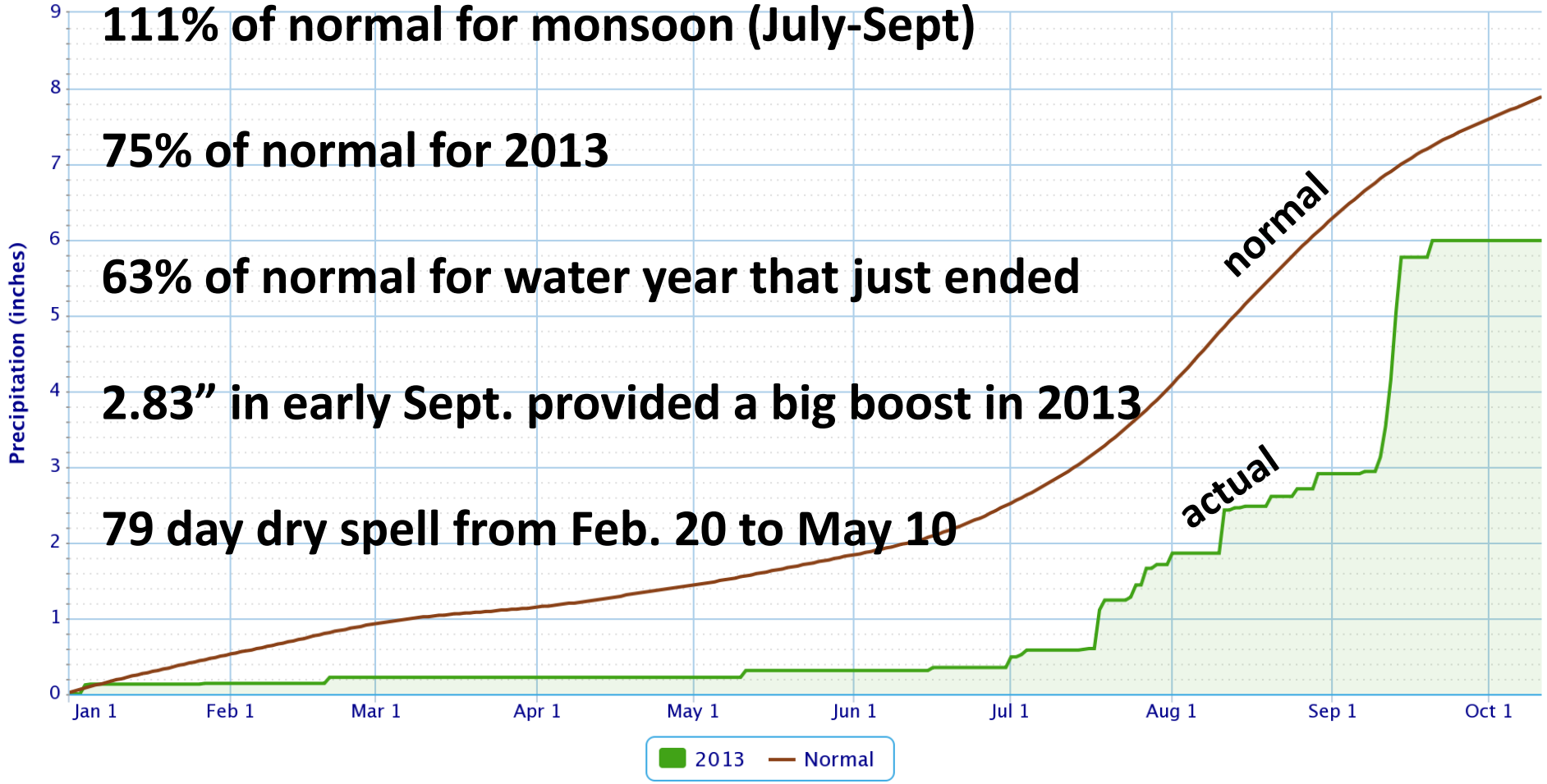
- 0% - 49%
- 50% - 99%
- 100% - 150%
- 151% - 200%
- 201% - 245%

Majority of locations >100% of normal

3 locations over 200% of normal

Las Cruces (NMSU) 2013 Precipitation

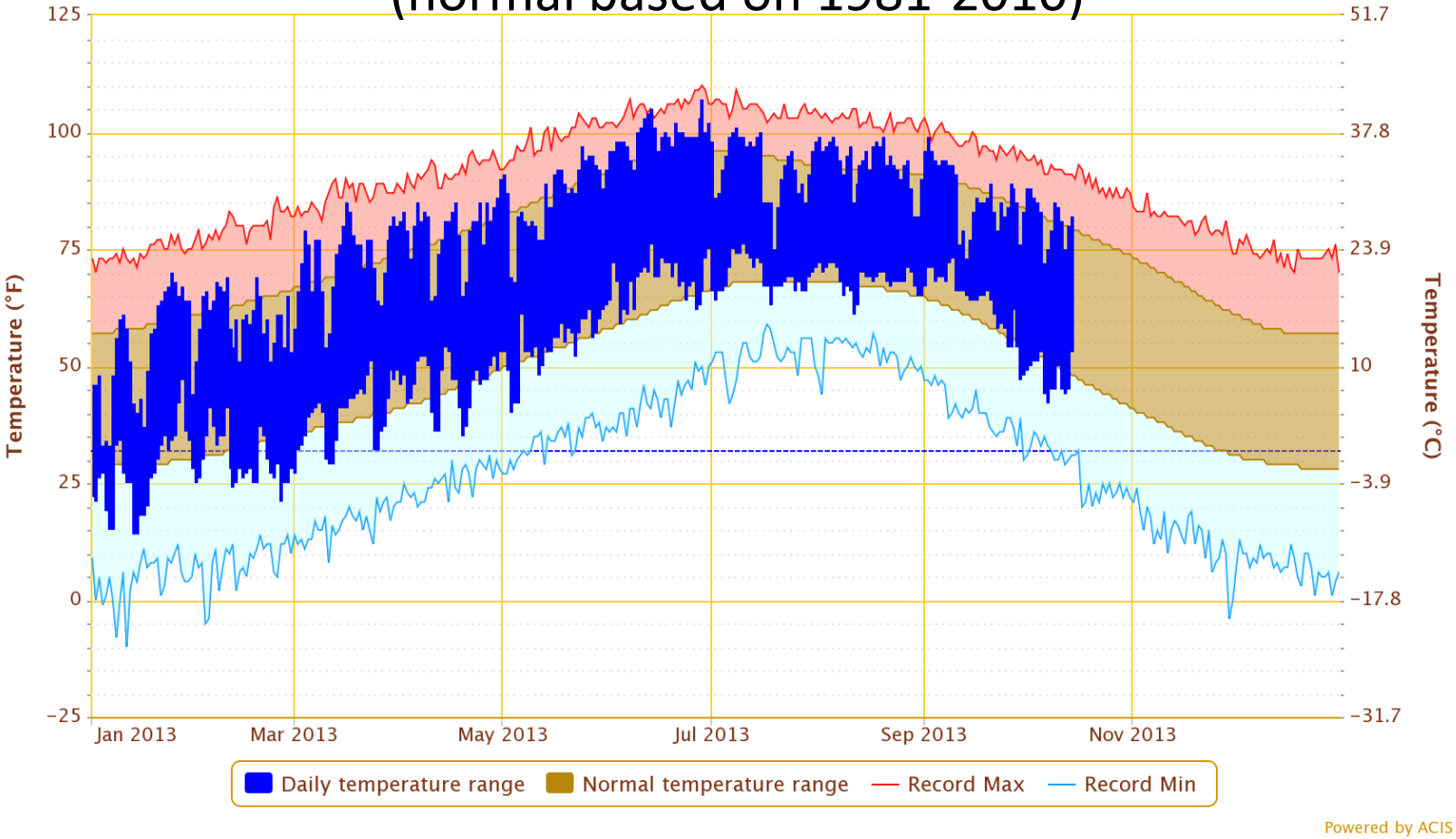
- *Above* normal for monsoon, b*elow* for the year



Source: ACIS

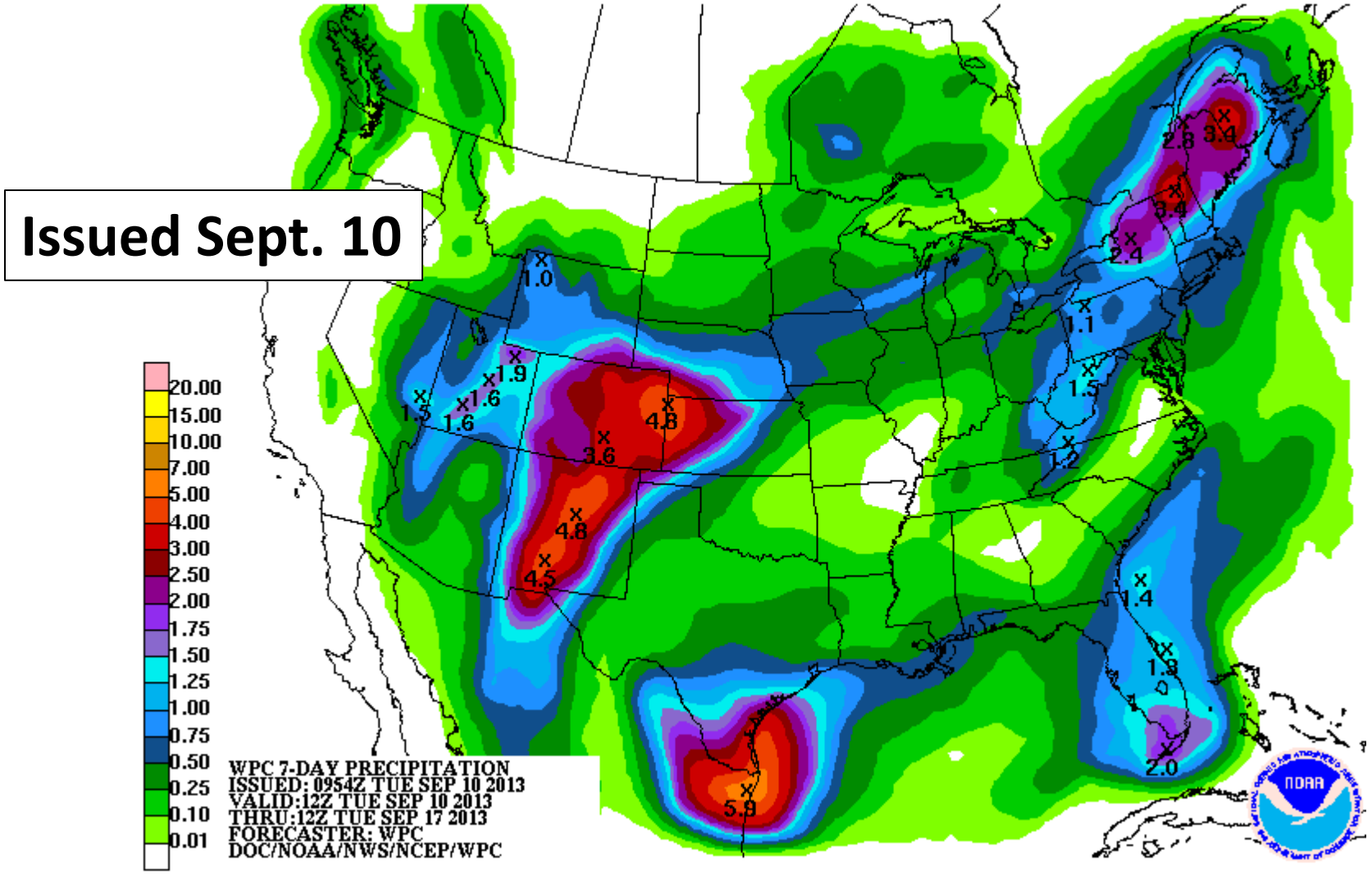
2013 Temperatures at NMSU

Average September temperature +1.1°F above normal
(normal based on 1981-2010)

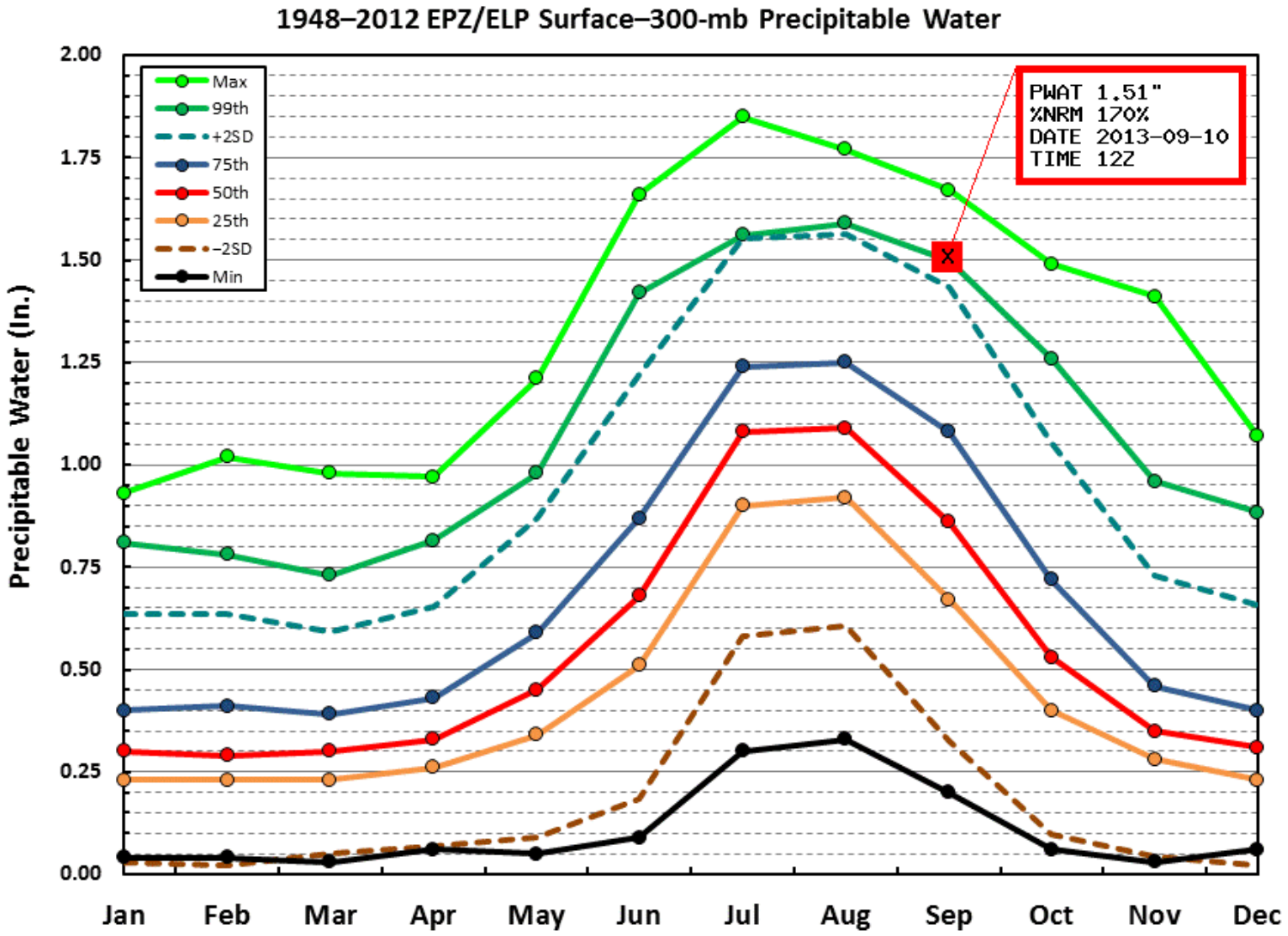


Average 2012 JAS temperature +2.2°F warmer than 20th century average

You know things are going to be interesting when you see a forecast map like this



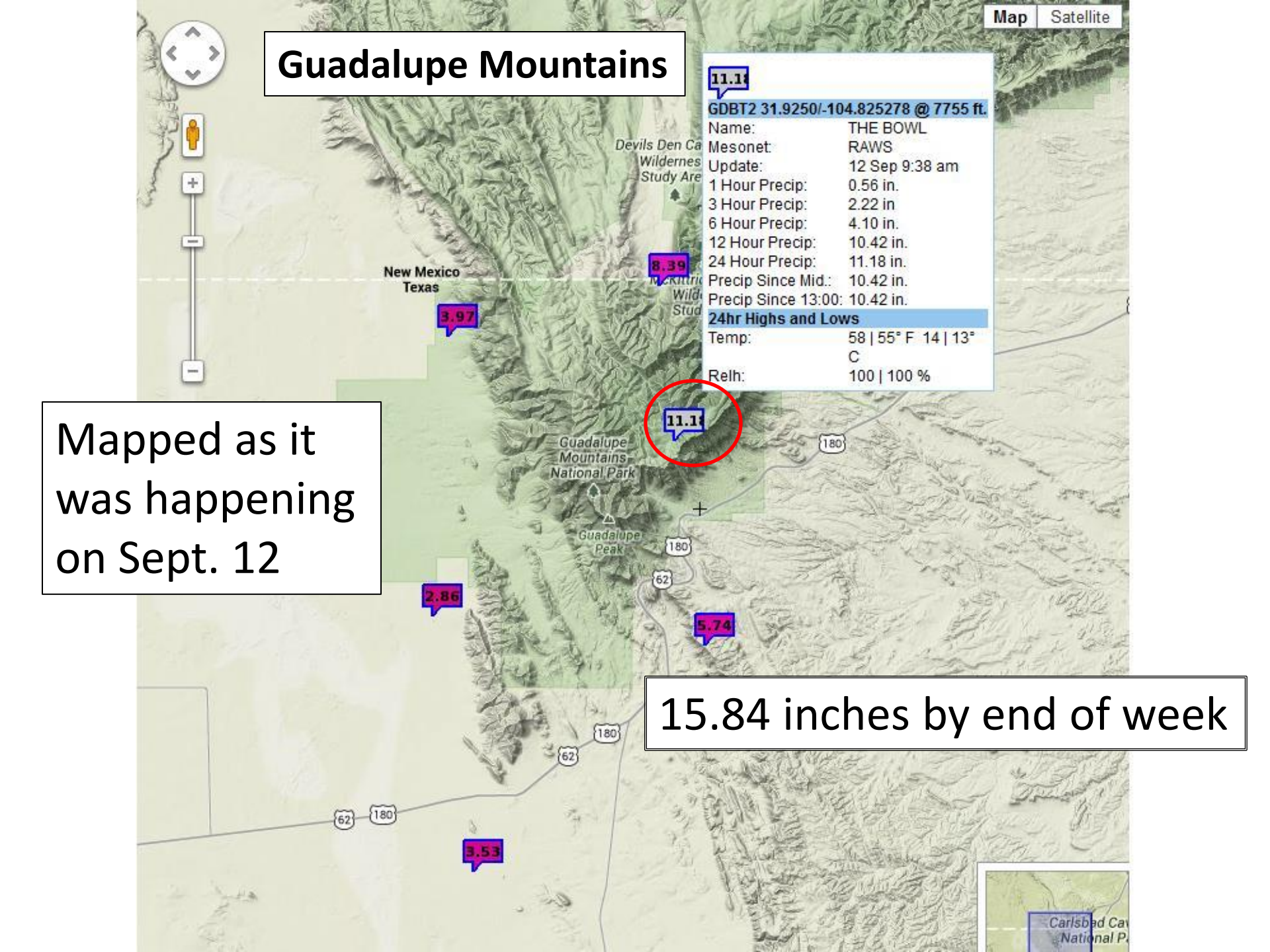
and with total atmospheric moisture at the 99th percentile

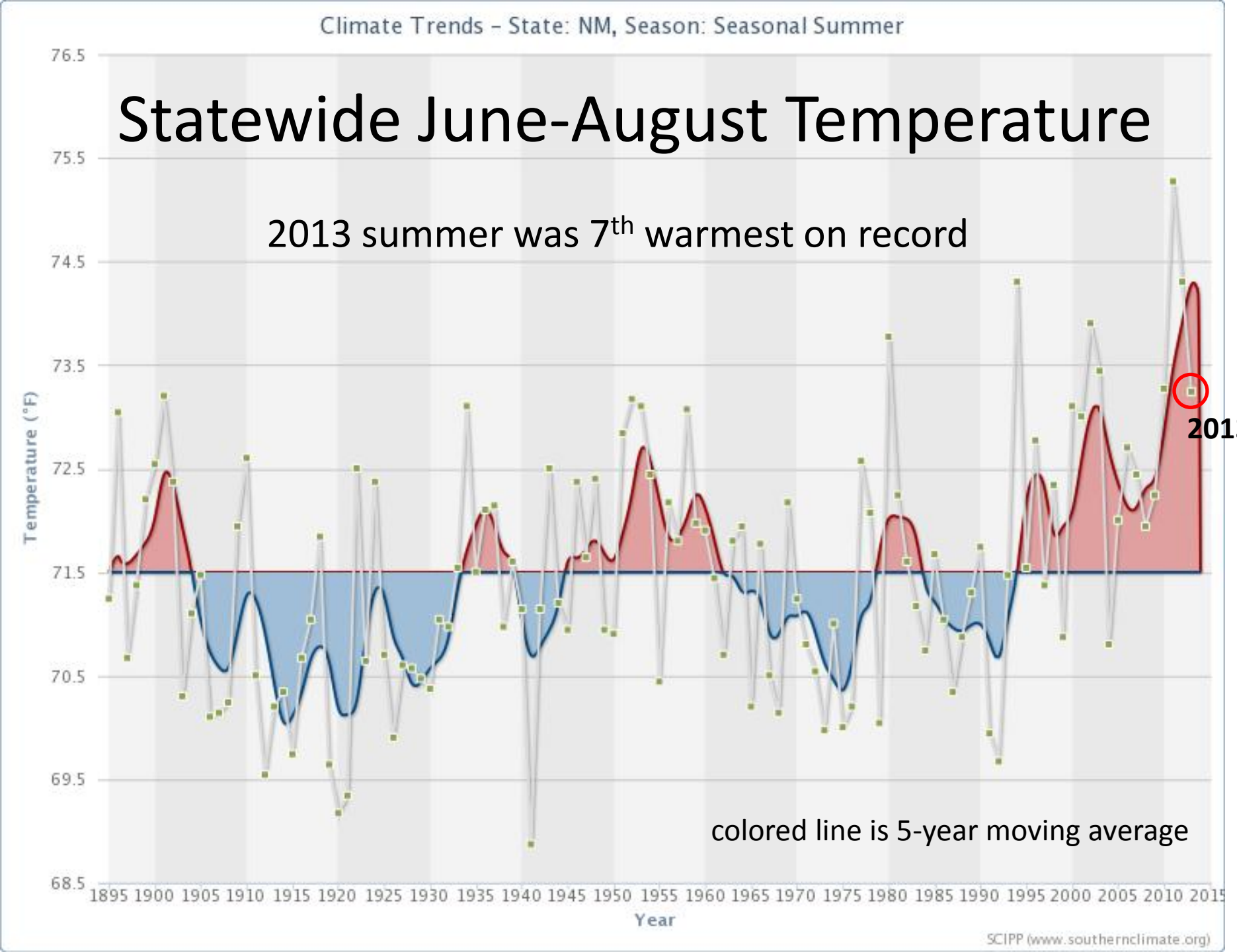


Year to date at a few locations as of Oct. 11

Station	YTD total precip (in)	Deviation from normal (in)	From Sept * storm (in)
PORTALES	16.92	2.05	3.43
HOPE	13.99	1.61	5.58
LOS LUNAS 3 SSW	9.51	1.48	1.97
ALBUQUERQUE INTL AP	7.94	0.15	3.14
DEMING MUNI AP	9.31	-0.01	3.02
GALLUP MUNI AP	9.28	-0.05	1.59
RIO RANCHO #2	8.93	-0.57	3.17
LAS VEGAS MUNI AP	15.31	-0.63	6.23
HILLSBORO	10.33	-0.76	5.37
MORIARTY 1 NE	10.45	-0.88	4.24
CLAYTON MUNI AIR PK	12.69	-1.61	4.05
CARLSBAD	9.63	-1.66	2.64
STATE UNIV	5.99	-1.90	2.83
ROSWELL IND AIR PK	8.34	-2.58	3.57
ROSWELL CLIMAT	9.90	-3.16	3.76
OCHOA	8.60	-3.20	0.01
TUCUMCARI MUNI AP	11.01	-3.96	3.04
TATUM	10.42	-4.41	0.15

* Storm Sept. 9-16


Guadalupe Mountains
Map
Satellite
11.18
GDBT2 31.9250/-104.825278 @ 7755 ft.
Name: THE BOWL
Mesonet: RAWS
Update: 12 Sep 9:38 am
1 Hour Precip: 0.56 in.
3 Hour Precip: 2.22 in
6 Hour Precip: 4.10 in.
12 Hour Precip: 10.42 in.
24 Hour Precip: 11.18 in.
Precip Since Mid.: 10.42 in.
Precip Since 13:00: 10.42 in.
24hr Highs and Lows
Temp: 58 | 55° F 14 | 13° C
Relh: 100 | 100 %
Devils Den Ca
Wildernes
Study Are
New Mexico
Texas
8.39
3.97
11.18
Guadalupe Mountains National Park
Guadalupe Peak
180
62
2.86
5.74
3.53
Carlsbad Cav
National P
Mapped as it was happening on Sept. 12
15.84 inches by end of week


Climate Trends – State: NM, Season: Seasonal Summer
Statewide June-August Temperature
2013 summer was 7th warmest on record
2013
colored line is 5-year moving average
Temperature (°F)
Year
76.5
75.5
74.5
73.5
72.5
71.5
70.5
69.5
68.5
1895 1900 1905 1910 1915 1920 1925 1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015
SCIPP (www.southernclimate.org)

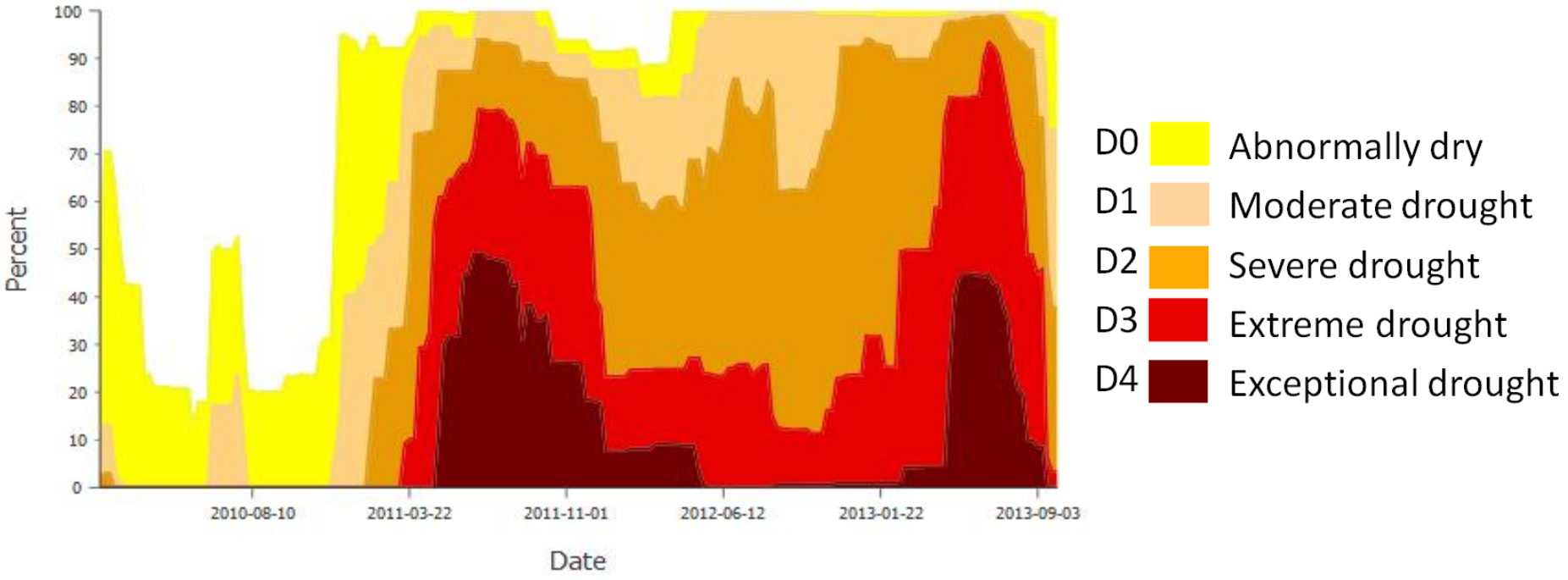
US Drought Monitor

Drought classification puts drought in historical perspective

DM Level	Name	Frequency
D0	Abnormally dry	3-5 years
D1	Moderate drought	5-10 yrs
D2	Severe drought	10-20 yrs
D3	Extreme drought	20-50 yrs
D4	Exceptional drought	50-100 yrs

State-wide NM Drought Monitor

- Drought impacts started in late 2010 with occurrence of D2



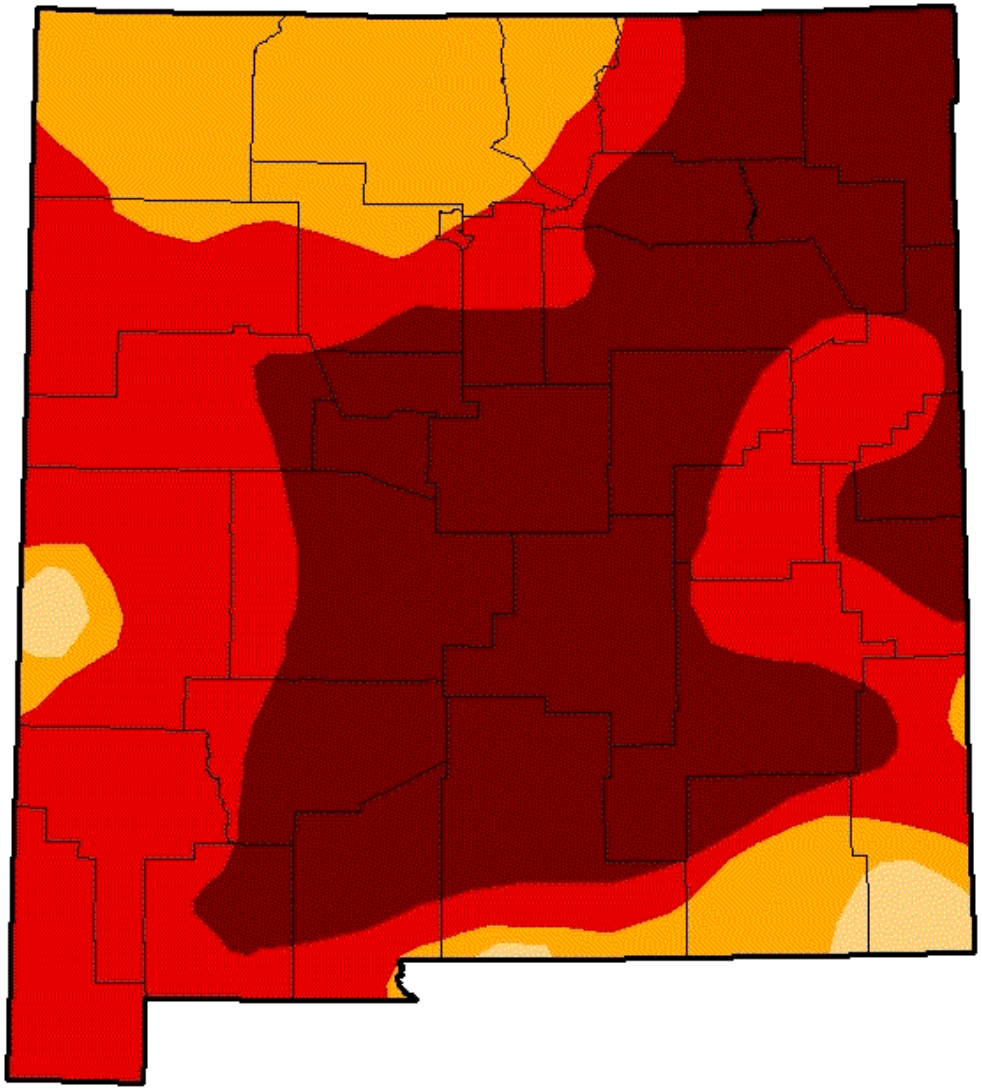
U.S. Drought Monitor

New Mexico

May 28, 2013

(Released Thursday, May. 30, 2013)

Valid 7 a.m. EST



Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

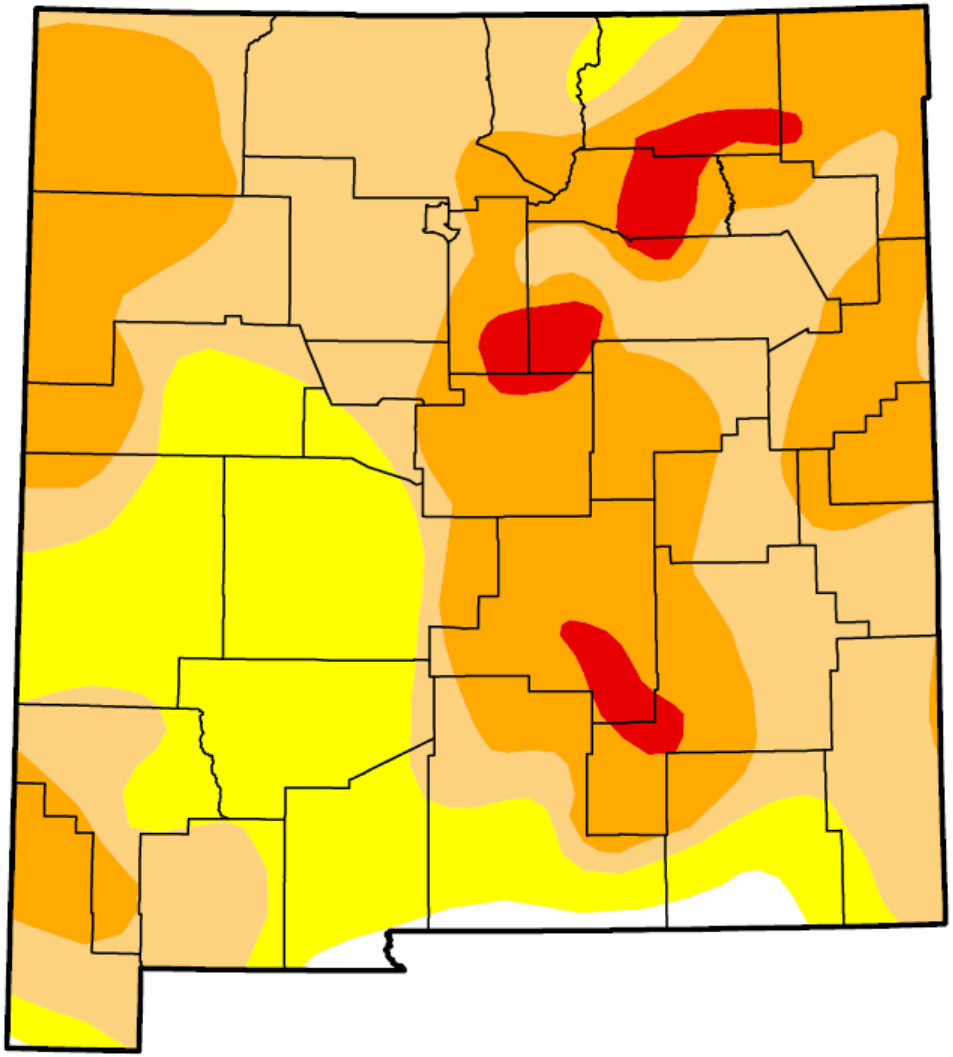
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Brad Rippey
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/

U.S. Drought Monitor

New Mexico



October 8, 2013

(Released Thursday, Oct. 10, 2013)

Valid 7 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.67	98.33	74.92	37.81	3.39	0.00
Last Week *10/1/2013*	1.66	98.34	74.92	37.81	3.39	0.00
3 Months Ago *7/9/2013*	0.00	100.00	100.00	98.92	90.91	42.43
Start of Calendar Year *1/1/2013*	0.00	100.00	98.83	94.05	31.88	0.97
Start of Water Year *10/1/2013*	1.66	98.34	74.92	37.81	3.39	0.00
One Year Ago *10/9/2012*	0.00	100.00	99.84	62.37	12.28	0.68

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

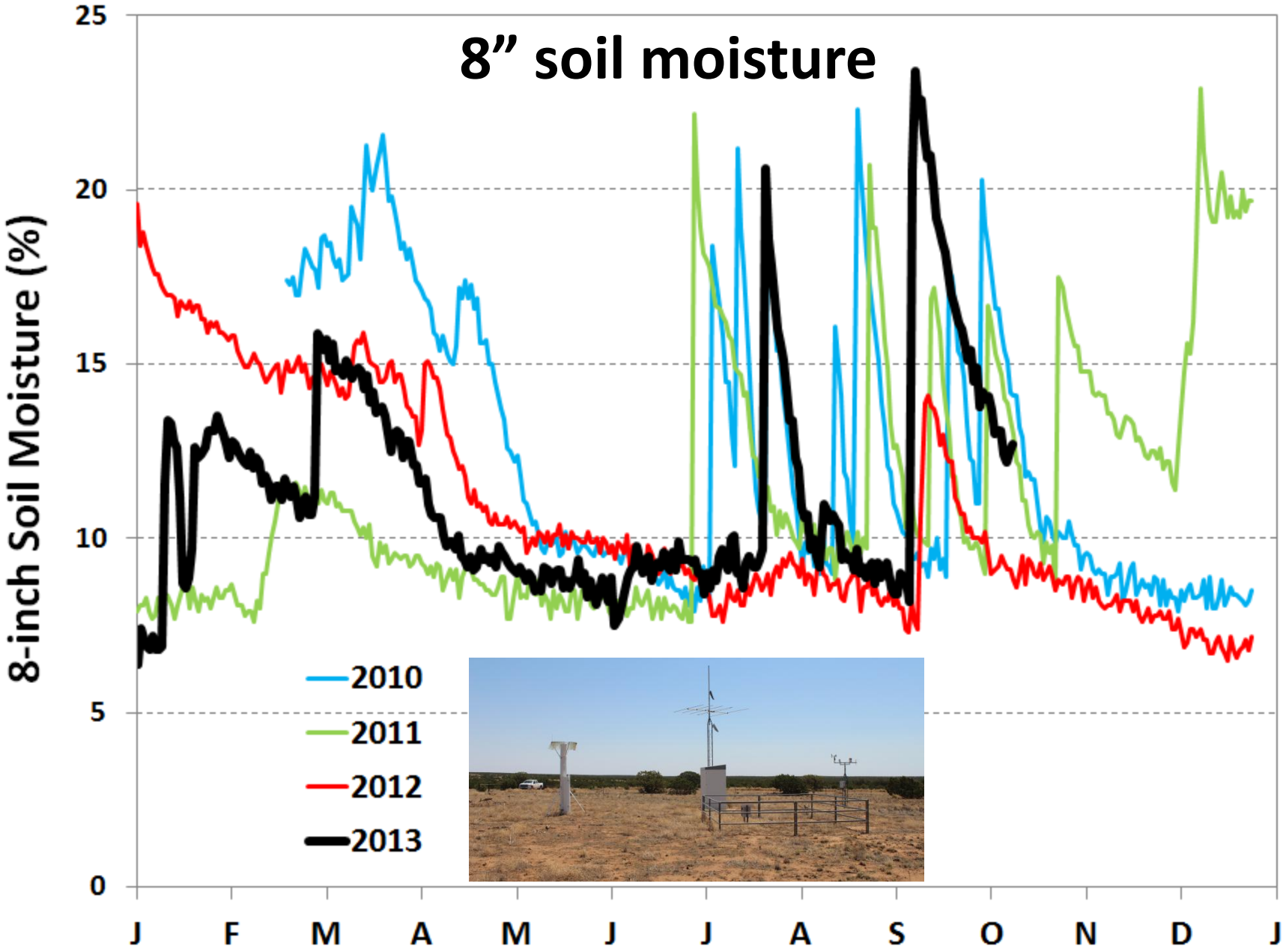
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

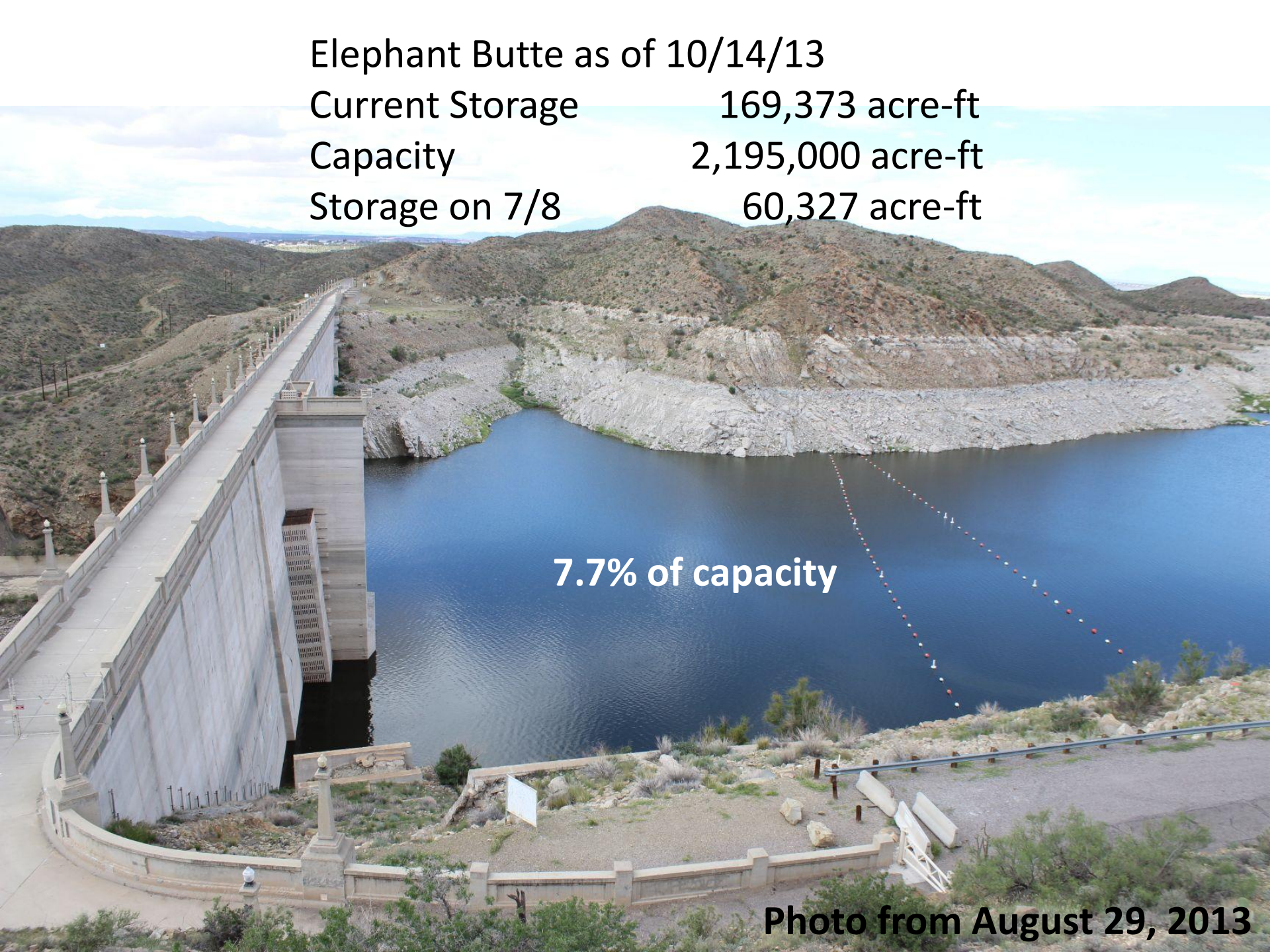
Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

National Drought Mitigation Center

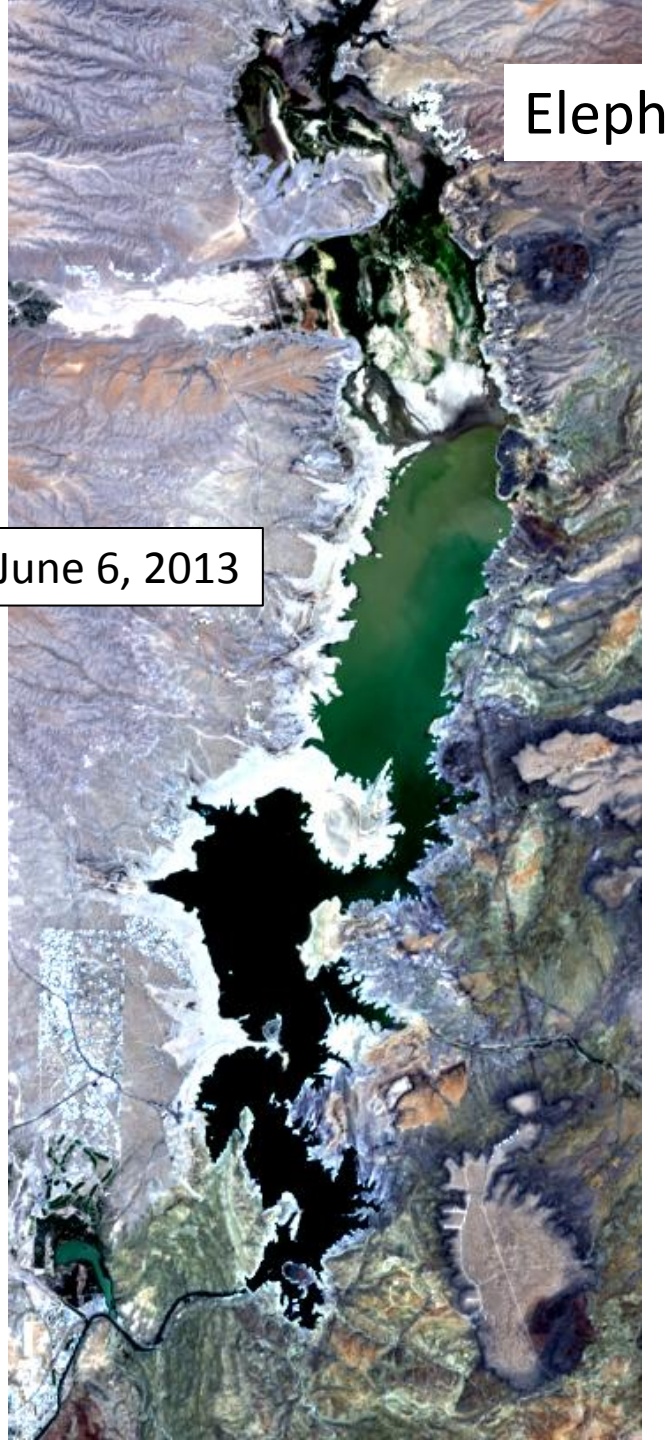
http://droughtmonitor.unl.edu/

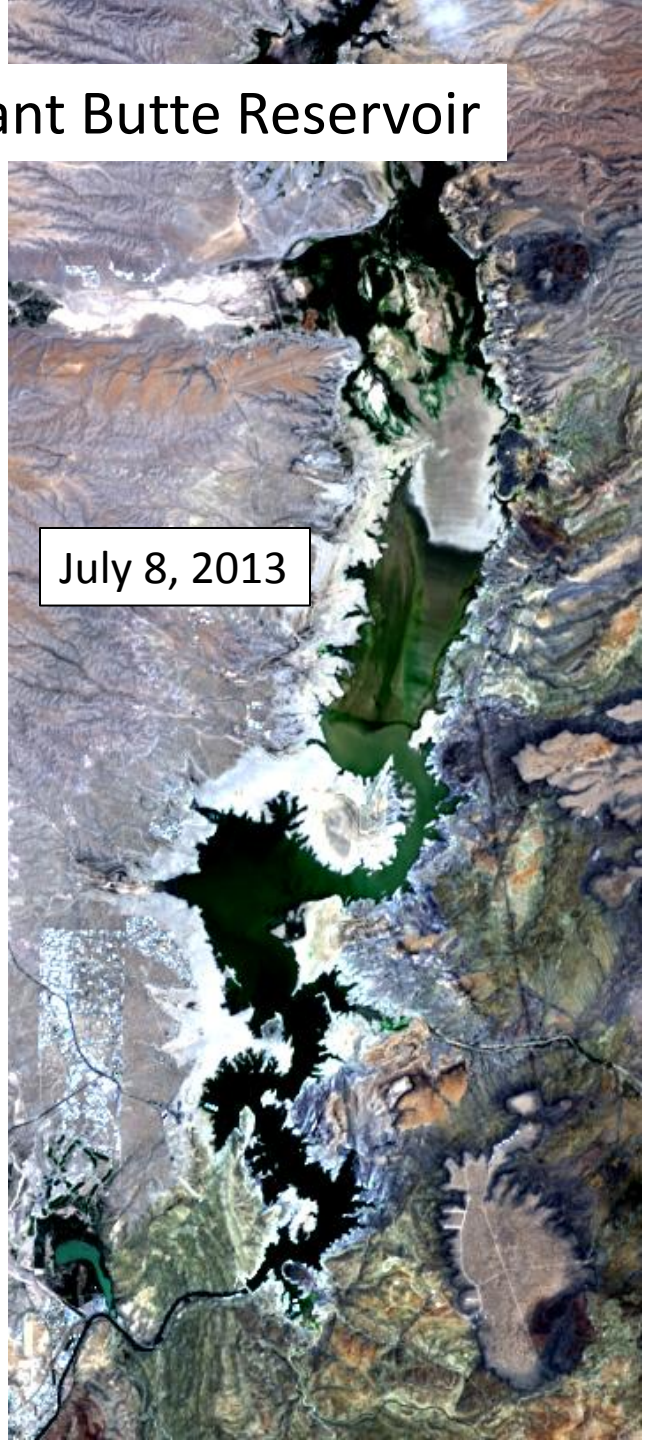
Corona, NM (Adams Ranch SCAN station)




Elephant Butte as of 10/14/13
Current Storage 169,373 acre-ft
Capacity 2,195,000 acre-ft
Storage on 7/8 60,327 acre-ft
7.7% of capacity
Photo from August 29, 2013

Elephant Butte Reservoir





The July date was about the minimum storage for the year after the irrigation.

I find it amazing what one month of about 2000 cubic feet per second flow out of the reservoir can do to the appearance of the lake.

Forecast - ENSO-neutral is expected through Spring 2014

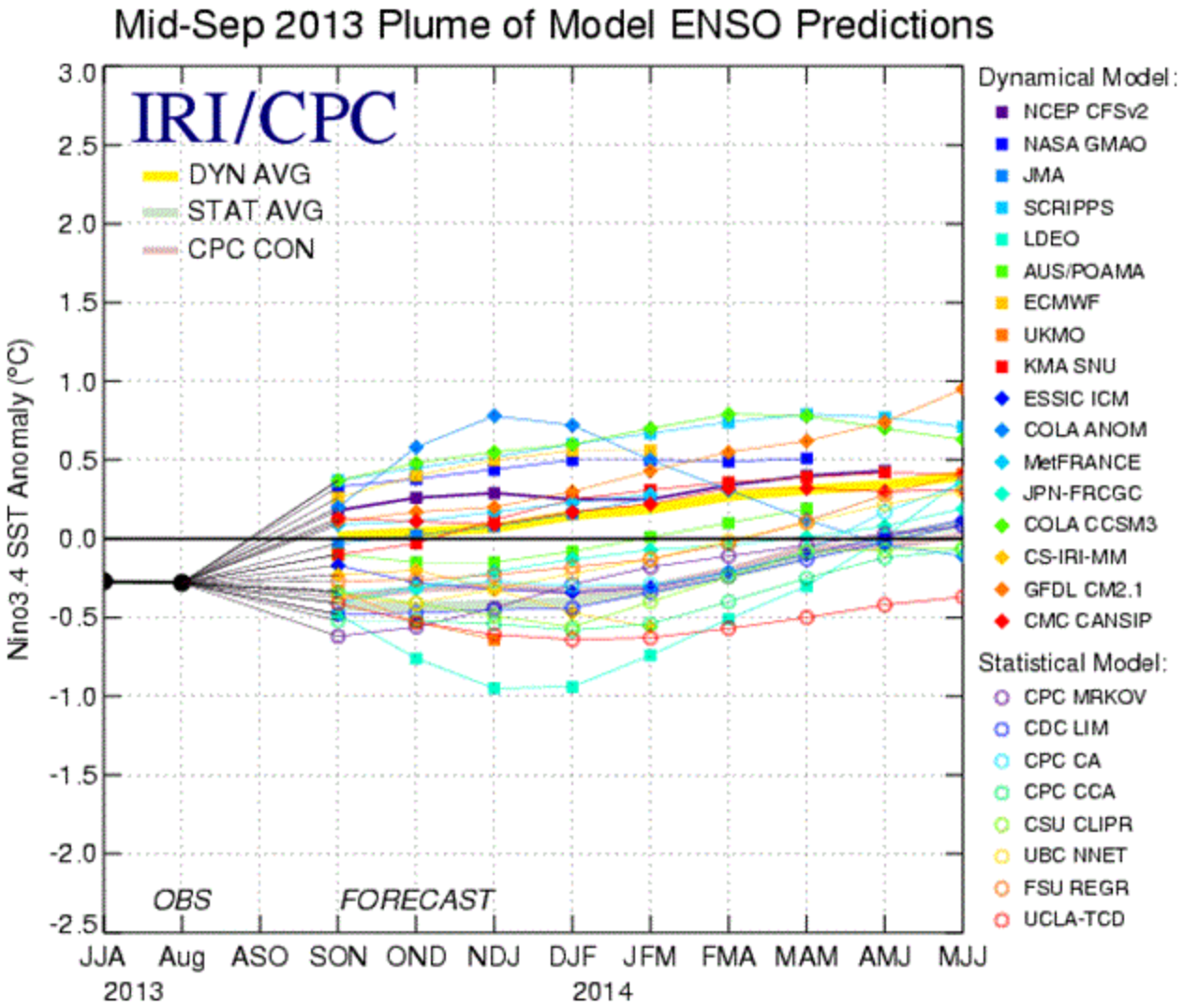


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 18 September 2013.

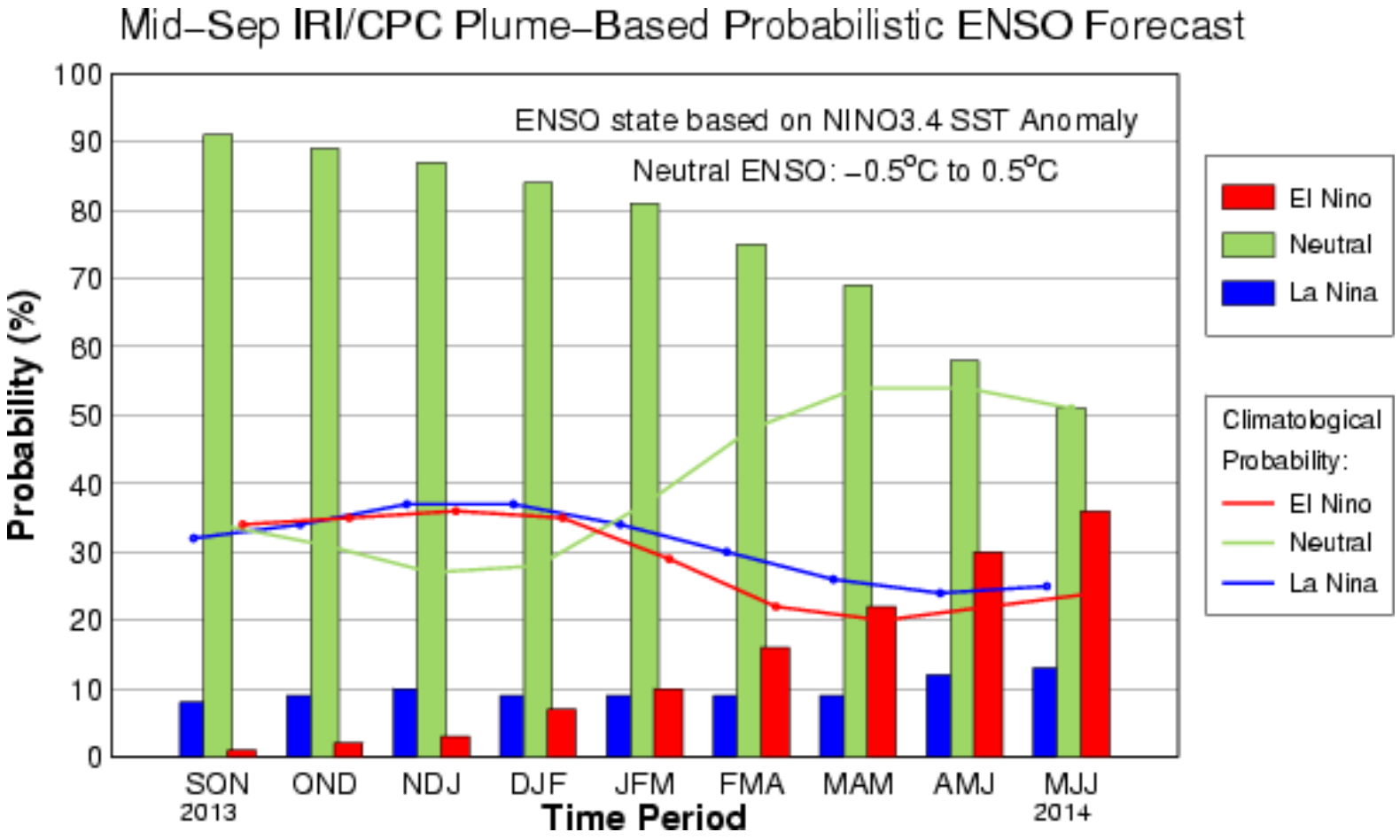
Seasonal Predictions

Many models predict a gradual increase from slightly cooler than average to warmer conditions as the spring approaches

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.html

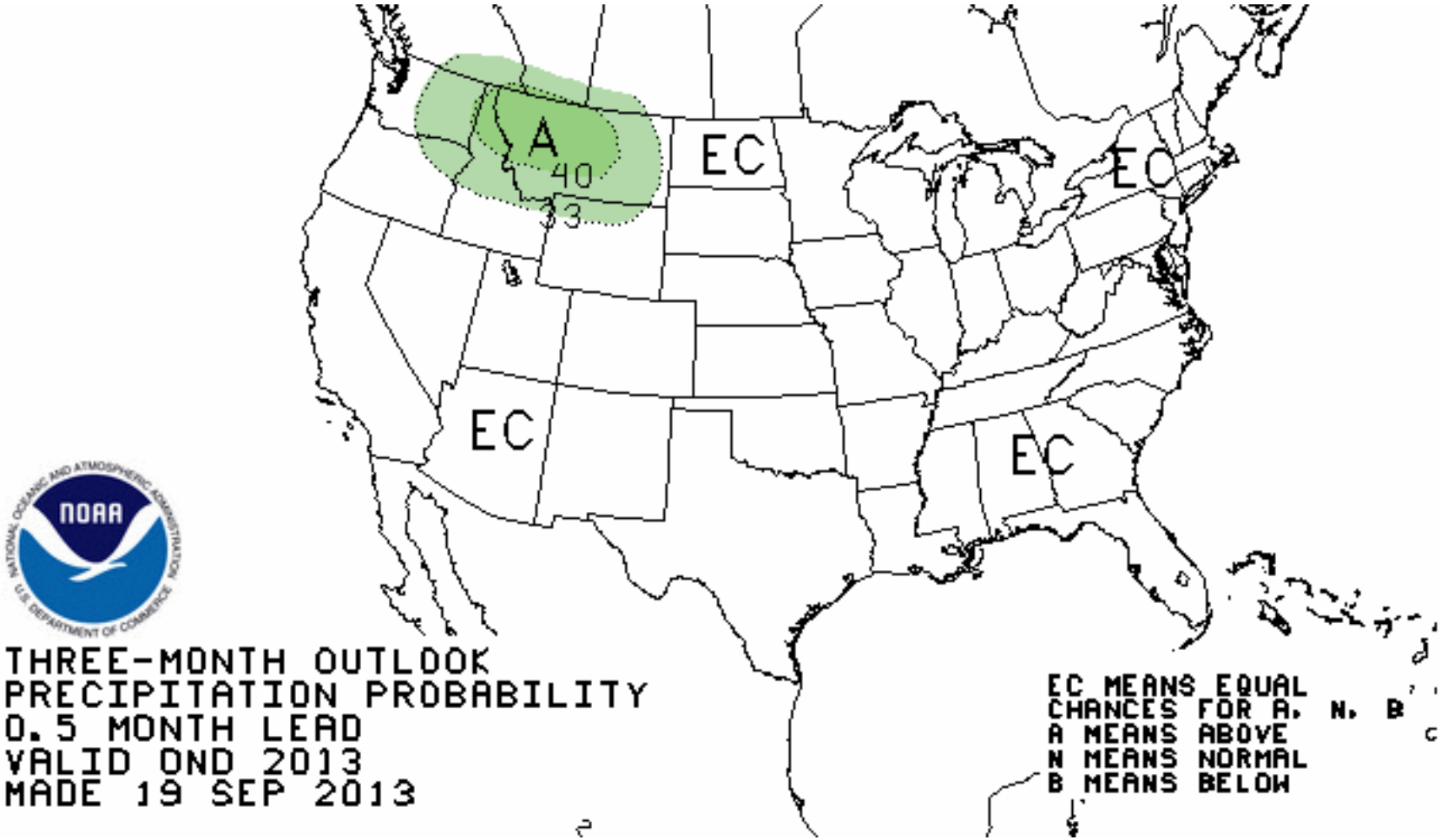
Seasonal Forecast

Neutral ENSO conditions most likely through the rest of the year



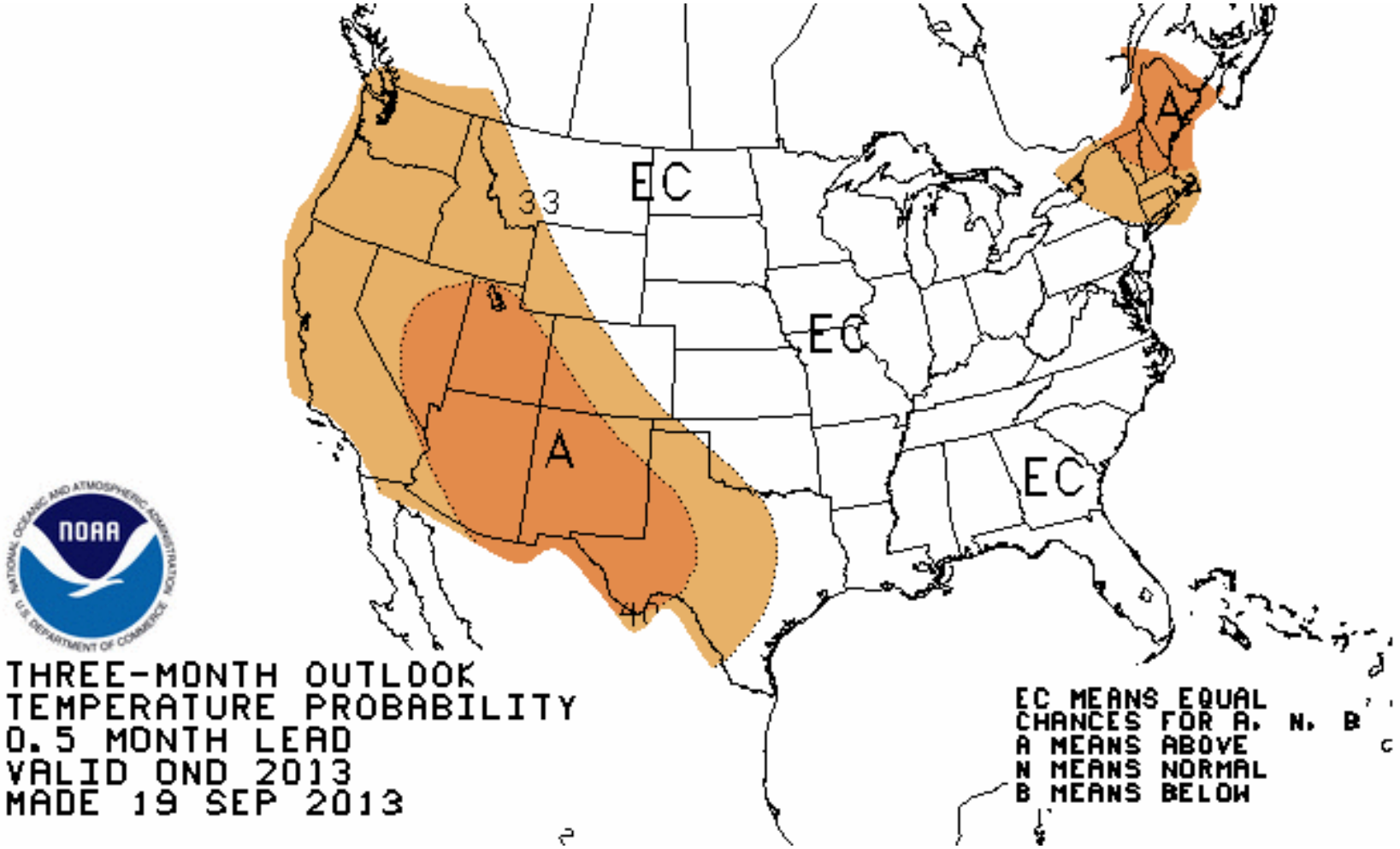
http://iri.columbia.edu/climate/ENSO/currentinfo/figure3.html

Oct – Dec Precipitation Outlook



http://www.cpc.ncep.noaa.gov/

Oct – Dec Temperature Outlook



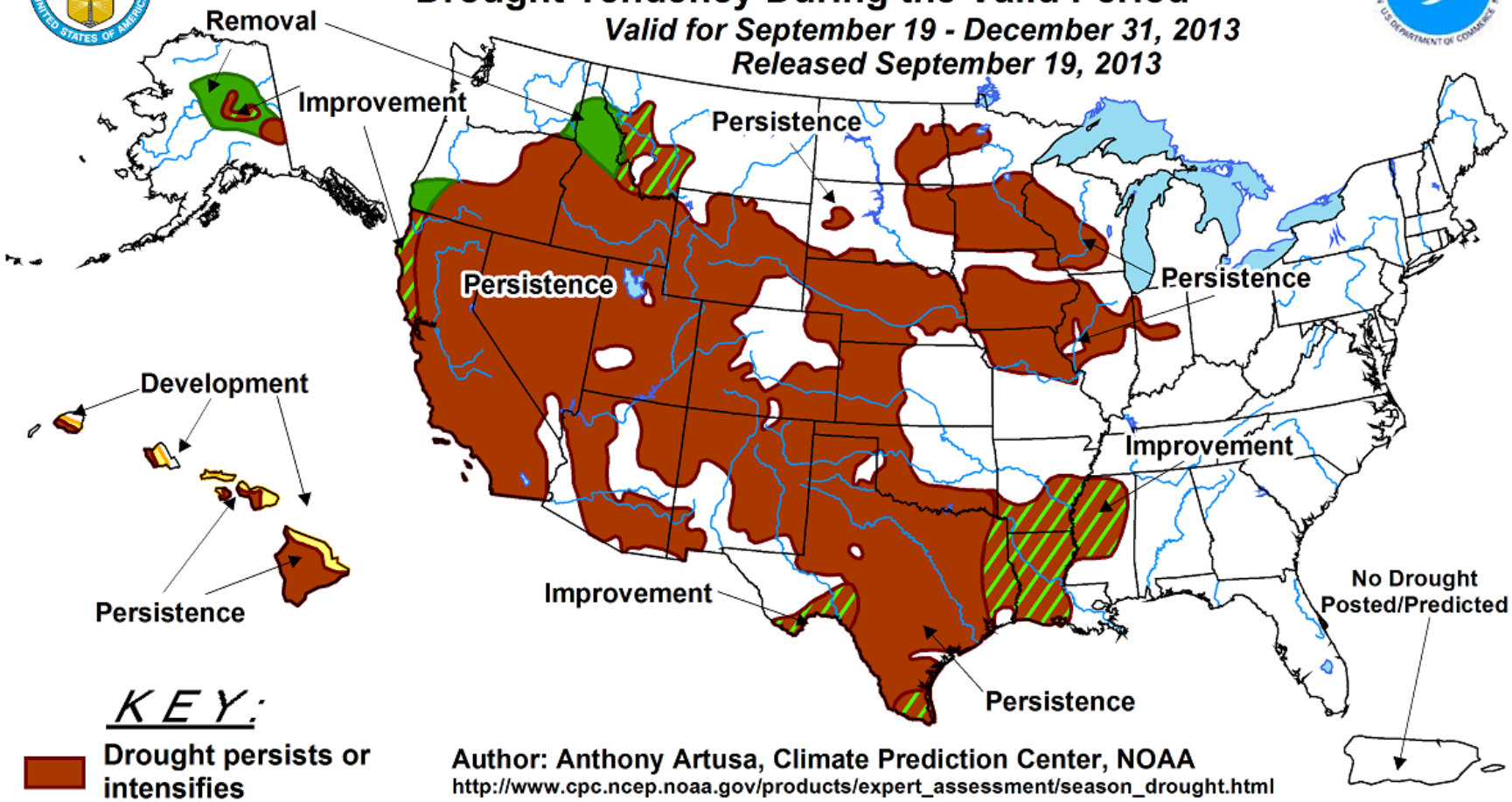
http://www.cpc.ncep.noaa.gov/

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for September 19 - December 31, 2013

Released September 19, 2013



KEY:

- **Drought persists or intensifies**
- **Drought remains but improves**
- **Drought removal likely**
- **Drought development likely**

Author: Anthony Artusa, Climate Prediction Center, NOAA
http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.html

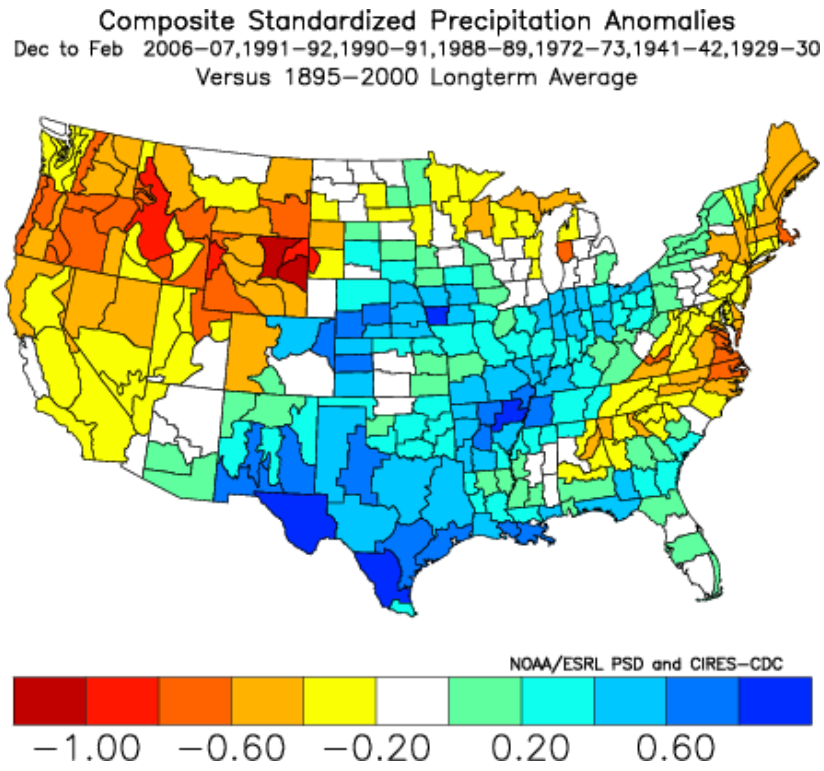
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor.
NOTE: The Green and Brown hatched areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain. The Green areas imply drought removal by the end of the period (D0 or none)

Outlook based on past wet monsoons

- Considering the wettest monsoons with anomalies >2” over the long-term average
- Let’s look at how the following winters (Dec to Feb) behave in terms of precipitation
- Long term averages are based on data from 1901 to 2000
- Wettest state-wide monsoons with anomalies >2” were in 2006, 1991, 1990, 1988, 1972, 1941, and 1929

Outlook from past wet monsoons

- During those very wet monsoon years we tend to have slightly wetter winters in southern NM compared to the north
- In the northern climate zones there is very little change compared to the mean
- Overall, there is not a strong tendency for wet a winter but at least it doesn't show drier than long-term average



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